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Macfarlane

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[54] **KICKUP RUDDER ASSEMBLY HAVING ROLLER DETENT**

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[51] **Int. Cl.**[3] **B63H 25/06**

[52] **U.S. Cl.** **114/165;** 114/162

[58] **Field of Search** 114/162, 163, 164, 165

[56] **References Cited**

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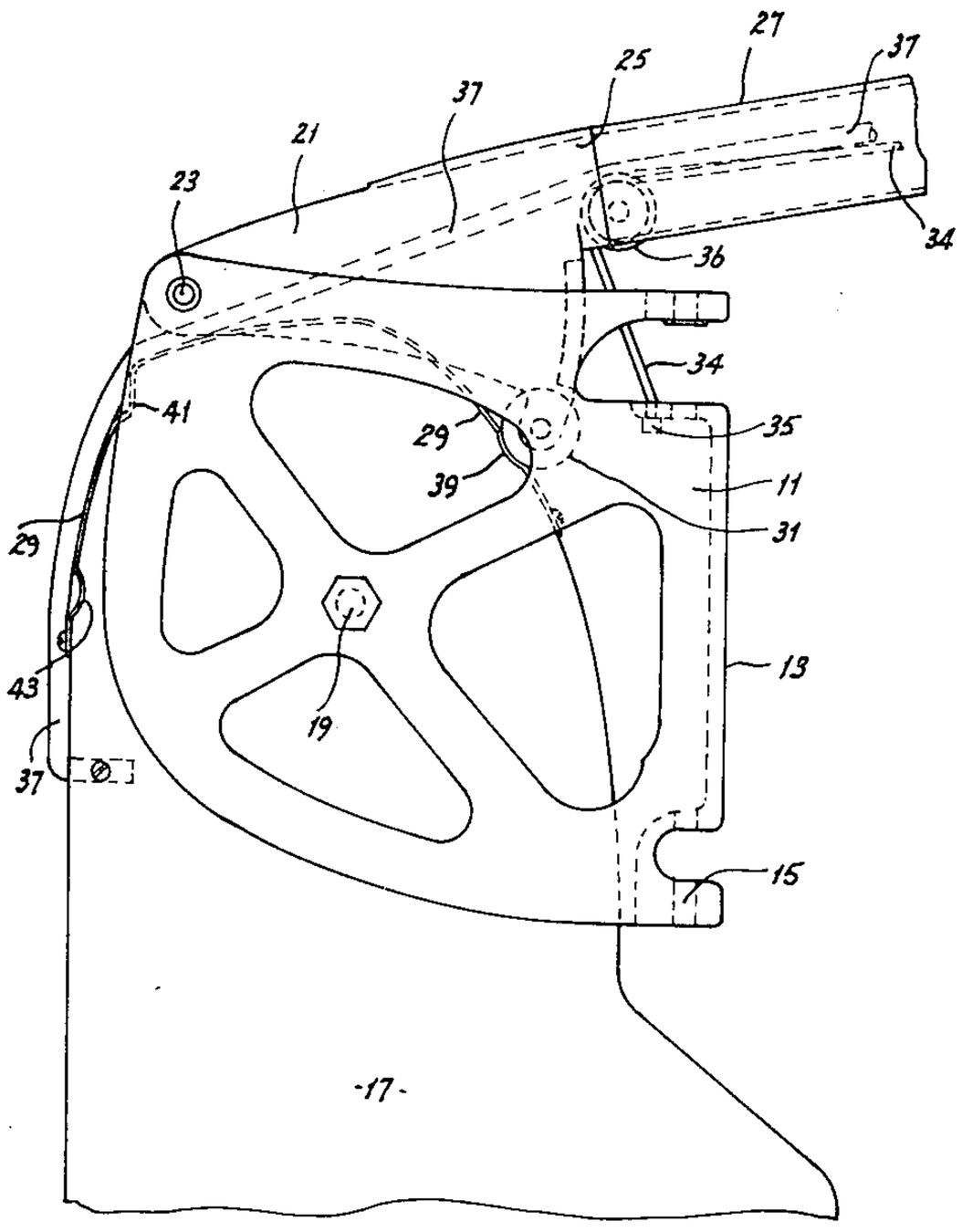
[57] **ABSTRACT**

A rudder assembly for a sailing craft comprising a housing adapted to be pivotally mounted on the stern of the craft for rotation about a substantially vertical axis, and a rudder pivotally mounted in said housing for rotation about a substantially horizontal transverse axis, means for holding the rudder in a downwardly projecting position and a rearwardly projecting position, said means comprising a roller urged into engagement with one of a plurality of indentations provided on said rudder.

8 Claims, 5 Drawing Figures



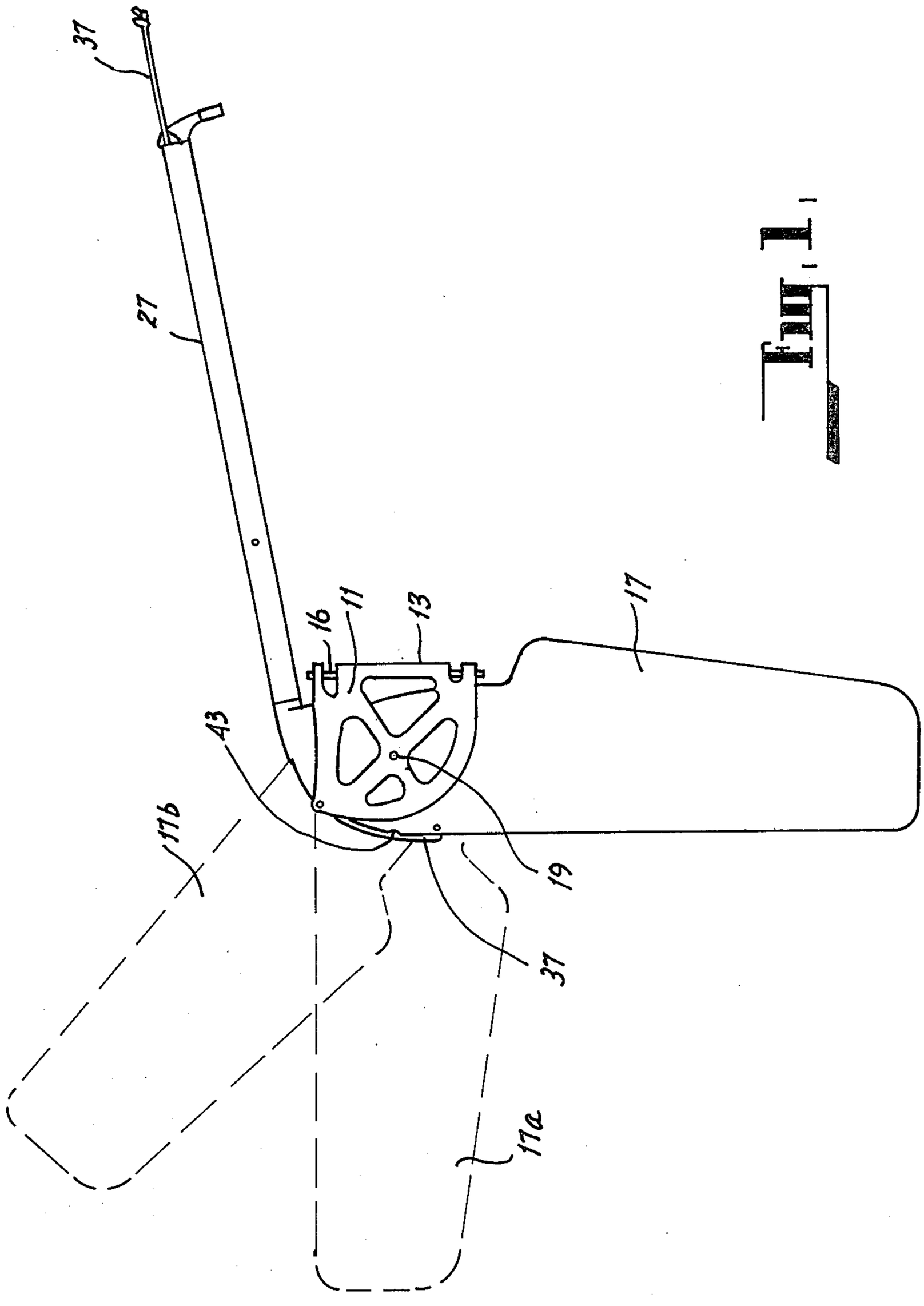


Fig. 1

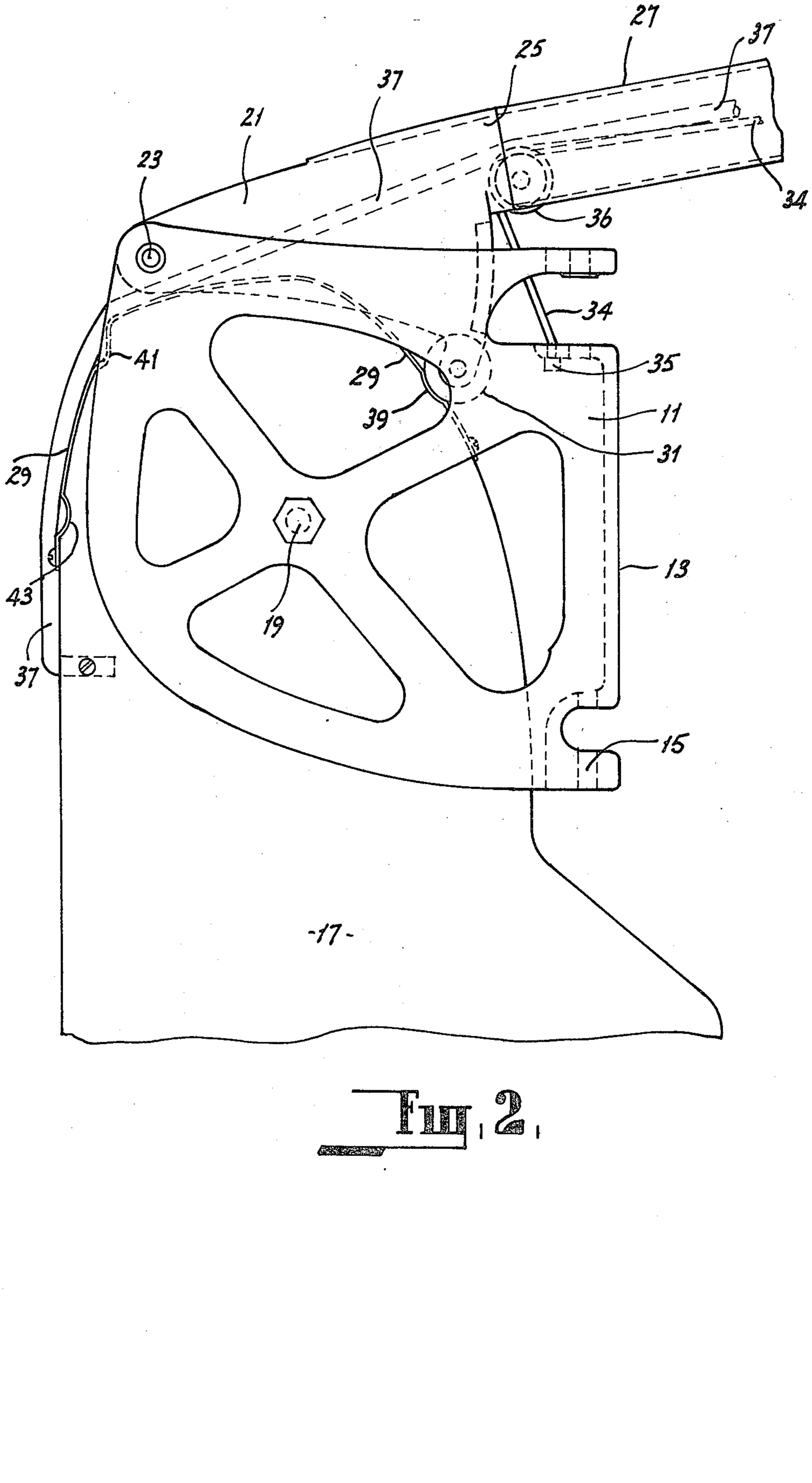


Fig. 2.

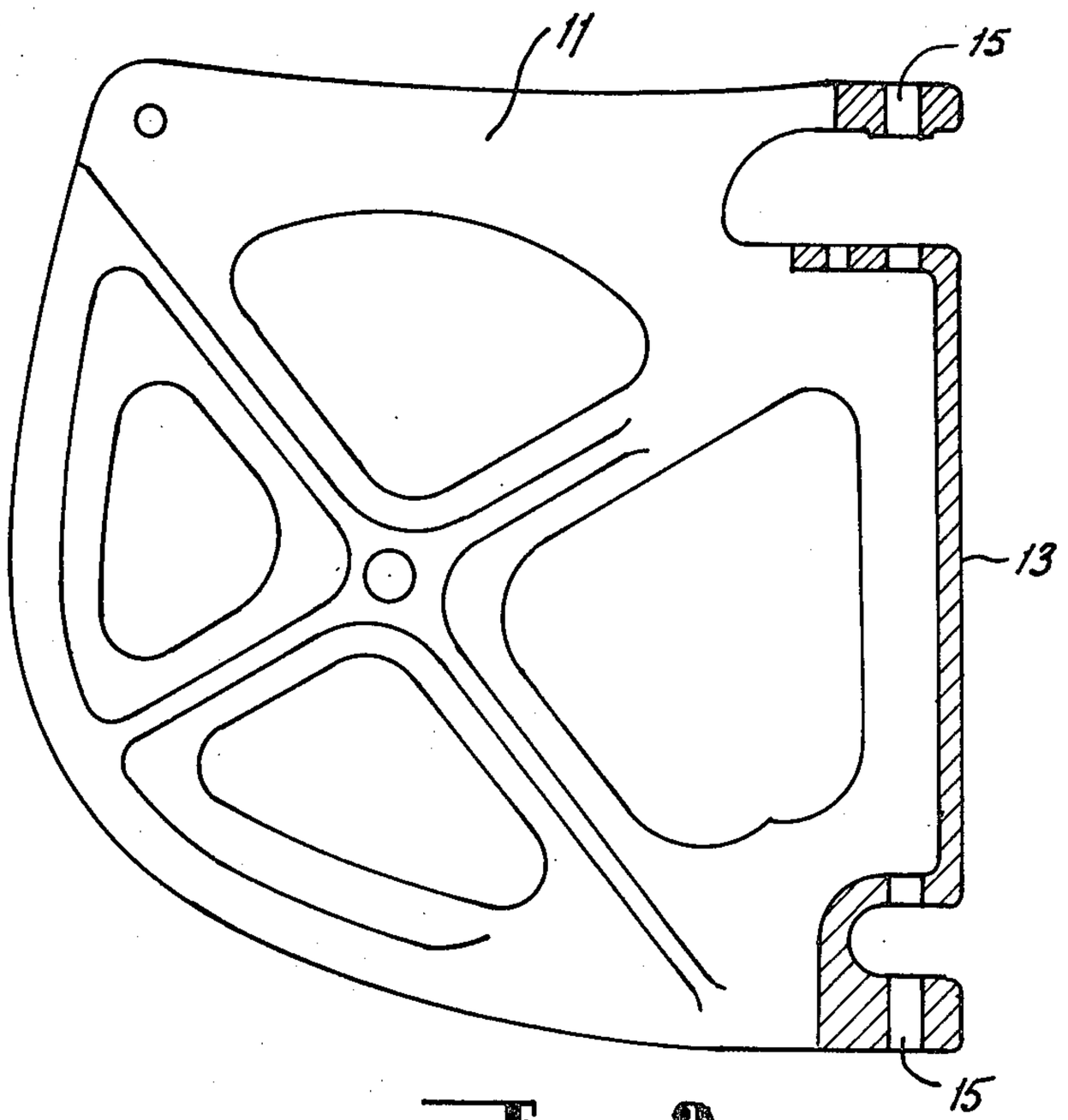


Fig. 3

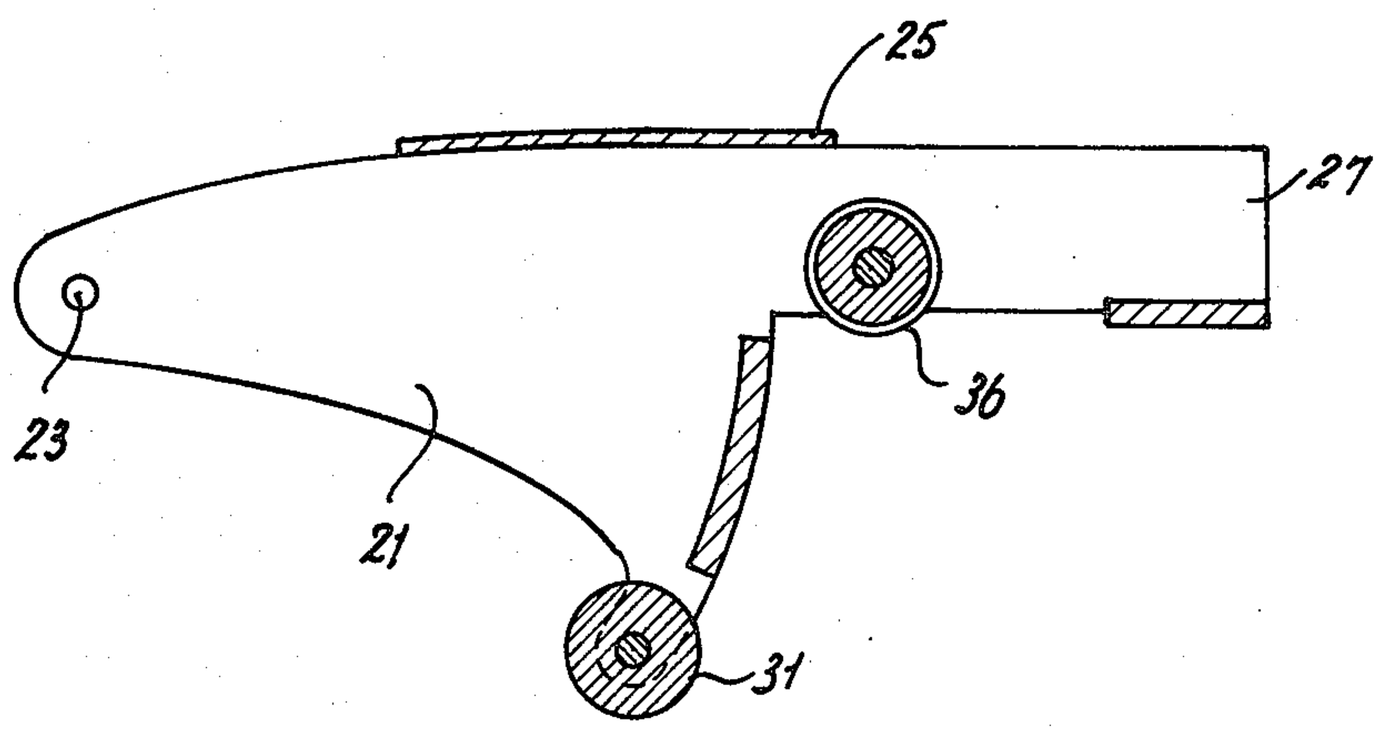


Fig. 4

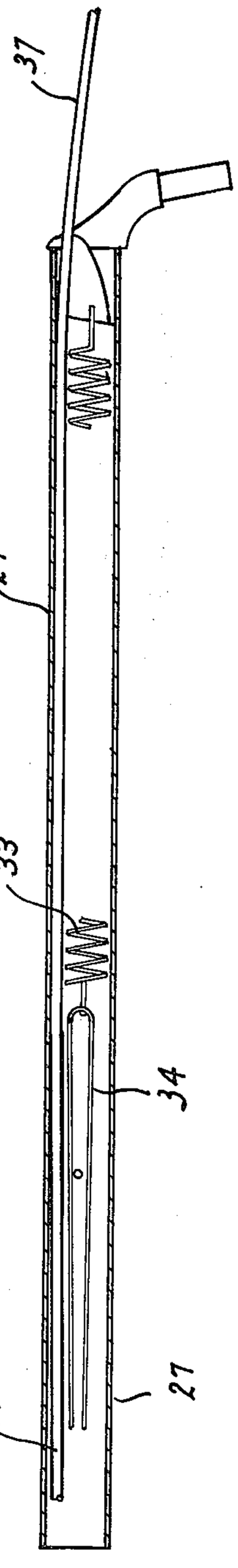


FIG. 5

KICKUP RUDDER ASSEMBLY HAVING ROLLER DETENT

This invention relates to a rudder assembly for a sailing craft and in particular to a rudder assembly for use on catamarans.

Throughout Australia, on both the surrounding oceans and on inland waterways has appeared thousands of sailing craft of the catamaran type. Being designed without a centreboard, light enough to be carried on the roof of a motor vehicle, and yet strong enough to perform admirably in rough seas has led to a tremendous increase in the number of yachtsmen. Coupled with the increase in the number of boats, has been the increase in clubs, national events and the continual pursuit of developing a faster boat. In attempts to produce a faster and better boat many alternative forms of rigging has been developed. Some equipment being suited for sailing on flat water whilst other equipment is at its best in rough ocean or choppy seas. One particular component that has come under a lot of criticism has been the style of rudder and rudder system utilised. A shallow rudder allows the owner to experience the thrill of "surfing" a wave to the beach and at the same time provides reasonable control. A deeper style of rudder gives better control but runs into problems when surfing or sailing in shallow waters. It is with these problems in mind that has led to the development of the current invention.

In one form the invention resides in a rudder assembly for a sailing craft comprising a housing adapted to be pivotally mounted on the stern of the craft for rotation about a substantially vertical axis, and a rudder pivotally mounted in said housing for rotation about a substantially horizontal transverse axis, means for holding the rudder in a downwardly projecting position and a rearwardly projecting position, said means comprising a roller urged into engagement with one of a plurality of indentations provided on said rudder.

In another form the invention resides in a rudder assembly for a sailing craft comprising a housing adapted to be pivotally mounted on the stern of the craft for rotation about a substantially vertical axis, and a rudder pivotally mounted in said housing for rotation about a substantially horizontal transverse axis, means for holding the rudder in a downwardly projecting position and a rearwardly projecting position, the pivotal mounting of the rudder in the housing being such that if a forwardly directed force of sufficient strength to damage the rudder is applied to the rudder the rudder will disengage from said pivotal mounting.

Preferably the rudder may also be held in an intermediate position between the downwardly and rearwardly projecting positions.

The invention will be better understood by reference to the following description of one specific embodiment as shown in the accompanying drawings wherein:

FIG. **1** is a side elevational view of the rudder assembly with the rudder in the downwardly projecting position;

FIG. **2** is a part sectional side elevation of the rudder mounting within the housing;

FIG. **3** is a sectional side elevation of the housing;

FIG. **4** is a sectional side elevation of the member connecting tiller arm to rudder assembly; and

FIG. **5** is a sectional view of the tiller arm.

In the embodiment shown in the drawings a rudder assembly for a sailing craft is constructed comprising a housing **11** adapted to be pivotally mounted on the stern of the craft for rotation about a substantially vertical axis.

As shown in FIGS. **2** and **3** of the drawings the forward face **13** of the housing **11** may contain a passage **15** through which may be passed a pin **16** or similar device to secure the housing to the stern of the craft. A rudder **17** is pivotally mounted in the housing **11** on pin **19**. The rudder **17** being rotatable about a substantially horizontal transverse axis. A means is provided to hold the rudder **17** in a rearwardly or downwardly projecting position. The means comprising a small housing **21** (shown in FIG. **4**) pivotally mounted at one end **23** to the housing **11** whilst its other extremity **25** is connected to the tiller arm **27**.

Projecting downwardly from the housing **21** to engage the upper edge **29** of the rudder **17** is a bush or roller **31**. A spring **33** or similarly suitable tension device is housed within the tiller arm **27**. One end of spring **33** being secured to a wire **34** which passes over roller **36** provided within housing **21** and is secured **35** to the housing **11**, whilst the other end of the spring **33** is secured within the tiller arm **27**. A cord **37** passes through the tiller arm **27** and has one end connected to the rudder **17** and its other end accessable to the skipper of the craft. The upper edge **29** of the rudder **17** is provided with a series of concave depressions **39, 41, 43** to mate with roller **31** on the raising or lowering of the rudder **17**.

The shape of the rudder head and the location of each of the concave depressions **39** to the pivot pin **19** is such that on raising or moving the rudder **17** from a downwardly projecting position to a rearwardly projecting position, the radius increases. On lowering the rudder to a downwardly projecting position, the distance of the roller **31** from pin **19** is reduced or in other words the radius of the rudder head decreases.

In operation, the rudder has a restraining force to maintain it in a downwardly projecting position. As the rudder pivots rearwardly on pin **19**, the greater or increasing radius provided on the rudder head causes the roller **31** to rise, pivot on point **23** and thereby tension spring **33** which is secured to the housing **11** via wire **34**. Thus contact with an underwater obstruction will cause the blade **17** to move rearwardly and increase the tension on spring **33** which, when the obstruction is removed or passed will assist to return the rudder to its normal operating position. If it is required to raise the rudder by hand the cord **37** is pulled by the skipper and the roller **31** will travel over the head of the rudder blade until it engages in depression **39, 41** or **43**, thereby maintaining the rudder in position **17**, **17***a* or **17***b* respectively. As roller **31** moves over surface **29** the roller, as previously described, lifts and consequently so does the tiller arm **27** which is secured to housing **21**. In order to lower the rudder the tiller arm **27** is lifted slightly to disengage roller **31** from the engaged depression **41** or **43**; by holding the tiller arm **27** the rate of descent can be controlled until the selected new rudder position has been attained. The downward movement of the rudder being controlled by spring **33** and the fact that roller **31** travels from a larger to a smaller rudder head radius.

In a second embodiment of the invention the rudder **17** may be provided with means which enables the rudder to be released from pin **19** when either an excessive forwardly or rearwardly directed force is applied to the

rudder 17. Such means may consist of a groove or channel running from the edge of the rudder to the pivotal mounting.

Whilst the invention has been described with reference to one specific embodiment, it is not limited thereto and numerous alterations may be made without departing from the scope of the claims.

I claim:

1. A rudder assembly for a sailing craft comprising a housing adapted to be pivotally mounted on the stern of the craft for rotation about a substantially vertical axis, and a rudder pivotally mounted in said housing for rotation about a substantially horizontal transverse axis, said rudder being pivotal about said horizontal axis between a downwardly projecting position and a rearwardly projecting position, means for holding the rudder in either of said positions, said means comprising first and second indentations formed in said rudder and corresponding to the respective of said positions, said first indentation lying at a different distance from said horizontal axis than said second indentation, and a roller urged into engagement with a selected one of said indentations.

2. A rudder assembly for a sailing craft as claimed in claim 1 wherein the holding means permits said rudder also to be held in a vertically upwardly projecting position.

3. A rudder assembly for a sailing craft as claimed in claim 2 wherein a cord is connected to said rudder and passes through a tiller arm connected to said rudder housing, said cord being operated by an occupant of the sailing craft to move said rudder from a downwardly projecting position to an upwardly projecting position or anywhere therebetween.

4. A rudder assembly for a sailing craft as claimed in claim 1 wherein said roller is urged into engagement with one of a plurality of indentations provided on said rudder by a wire member passing through said means and having one end secured to the said housing, the other end of said wire member being linked to a tensioning device housed within a tiller arm connected to said rudder assembly.

5. A rudder assembly for a sailing craft as claimed in claim 4 wherein said tensioning means comprises a spring.

6. A rudder assembly as set forth in claim 1 wherein the rudder is further pivotal about the horizontal axis to a vertically upwardly projecting position and further including a third indentation formed in said rudder and engageable with the roller for holding said rudder in said vertically upwardly projecting position, said third indentation being spaced a different distance from said horizontal axis from the first and second indentations.

7. A rudder assembly as set forth in claim 6 wherein the distance of the first indentation from the horizontal axis is less than the distance to the remaining indentations and the second indentation is spaced from said horizontal axis a distance less than the third indentation whereby a progressively increasing resistance is provided to pivotally move said rudder from its downwardly projecting position to its upwardly projecting position.

8. A rudder assembly as set forth in claim 7 wherein the roller is carried by means operatively connected to said tiller and pivotally supported by the housing about an axis parallel to and offset from the horizontal axis of said rudder.

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